

Chapter 1 Introduction

1-1. Purpose

This manual provides guidance to field office personnel for hydrologic engineering investigations for planning and design of reservoir projects. The manual presents typical study methods; however, the details of procedures are only presented if there are no convenient references describing the methods. Also, publications that contain the theoretical basis for the methods are referenced. Many of the computational procedures have been automated, and appropriate references are provided.

1-2. Applicability

This manual applies to all HQUSACE elements and USACE commands having civil works responsibilities.

a. Scope. This manual provides information on hydrologic engineering studies for reservoir projects. These studies can utilize many of the hydrologic engineering methods described in the manuals listed in paragraph 1-4. Hydraulic design of project features are not included here; they are presented in a series of hydraulic design manuals.

b. Organization. This manual is divided into four parts. Part 1 provides basic hydrologic concepts for reservoirs. Reservoir purposes and basic hydrologic concerns and methods are presented. Part 2 describes hydrologic data and analytical methods. Part 3 covers storage requirements for various project purposes, and the last, Part 4, covers hydrologic engineering studies.

1-3. References

Required and related publications are listed in Appendix A.

1-4. Related H&H Guidance

a. Engineer manuals. This engineer manual (EM) relies on, and references, technical information presented in other guidance documents. Some of the key EM's for reservoir studies are listed below. Additionally, there are related documents on hydraulic design for project features associated with reservoir projects. This document does not present hydraulic design concepts.

EM 1110-2-1201 Reservoir Water Quality Analysis

EM 1110-2-1415 Hydrologic Frequency Analysis

EM 1110-2-1416 River Hydraulics

EM 1110-2-1417 Flood-Runoff Analysis

EM 1110-2-1602 Hydraulic Design of Reservoir Outlet Works

EM 1110-2-1603 Hydraulic Design of Spillways

EM 1110-2-1701 Hydropower

EM 1110-2-3600 Management of Water Control Systems

EM 1110-2-4000 Sedimentation Investigation of Rivers and Reservoirs

These manuals provide the technical background for study procedures that are frequently required for reservoir analysis. Specific references to these EM's are made throughout this document.

b. Engineer regulations. There are several engineer regulations (ER) which prescribe necessary studies associated with reservoir projects. The most relevant ER's are listed below.

ER 1110-2-1460 Hydrologic Engineering Management

ER 1110-2-7004 Hydrologic Analysis for Watershed Runoff

ER 1110-2-7005 Hydrologic Engineering Requirements for Flood Damage Reduction Studies

ER 1110-2-7008 Hydrologic Engineering in Dam Safety

ER 1110-2-7009 Hydrologic Data Collection and Management

ER 1110-2-7010 Local Protection - Safety/Workability

ER 1110-8-2(FR) Inflow Design Floods for Dams and Reservoirs

These and other regulations should be consulted prior to performing any hydrologic engineering study for reservoirs. A current index of regulations should be consulted for new and updated regulations.